AMENDMENTS

To the Specification:

Please amend paragraph [0002] as follows:

[0002] [[The]] A Universal Serial Bus (abbreviated as USB) is a connection an interface used [[in]] for connecting the peripheral device [[of]] with a computer device such as a desktop computer, a notebook computer, and a Personal Digital Assistant (abbreviated as PDA). Since it is hot-swappable, [[the]] a user can easily [[add]] plug the peripheral device into or remove it from the computer device[[,]]. and the desktop computer, notebook computer, and PDA The computer device can automatically detect the peripheral device for maintaining its normal operation while it is being added when the peripheral device is plugged into or removed from the computer device. Therefore, [[the]] USB interface has interfaces have been widely applied in [[the]] peripheral devices such as a keyboard keyboards, a mouse mice, a network-adapter network adapters, and a printer printers. Moreover, since it is convenient [[in]] to add adding or removing the remove a peripheral device [[using]] with a [[the]] USB interface as a computer peripheral device, a storage device using the USB interface has been developed to facilitate the data transfer and data sharing between different computers.

Please amend paragraph [0003] as follows:

[0003] There are four kinds of transfer [[type]] transmission defined in the USB protocol (include bulk, control, interrupt and isochronous). The most familiar frequently used transfer

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[[type]] transmission is bulk transfer. The bulk transfer [[type]] transmission is commonly used in the USB storage device for transmitting a great amount of data. The bulk transfer [[type]] transmission has a USB hand shake mechanism, thus it can guarantee the correctness of the data transfer. However, among various USB transmissions, since the bulk transfer [[type]] transmission cannot guarantee the data transfer bandwidth, when several USB devices are using a USB simultaneously, the bandwidth of the device using the bulk transfer [[type]] transmission is ~~distributed~~ divided and shared by all USB devices in the USB and the transfer rate is degraded.

Please amend paragraph [0004] as follows:

[0004] FIG. 1 is a transfer rate sharing diagram of a USB ~~which connects~~ connecting to different ~~number~~ quantities of [[the]] USB devices using [[the]] bulk transfer [[type]] transmission. It is assumed that the maximum data transfer rate for the USB is 48 Mbytes/sec, and there are three devices, A, B, and C, ~~three devices~~ each having only [[a]] one bulk endpoint. In FIG. 1(a), ~~where~~ only device A is connected to the USB, and the data transfer rate of device A is up to 48 Mbytes/sec. In FIG. 1(b), ~~where~~ both devices A and B are connected to [[one]] a same USB and use the USB simultaneously, and the shared data transfer rate [[for]] of each device A and B is 24 Mbytes/sec, respectively. In FIG. 1(c), ~~where~~ all device A, B, and C are connected to the USB and use the USB simultaneously, and the shared data transfer rate [[for]] of each device A, B, and C is 16 Mbytes/sec, respectively. In other words, when the number of the USB devices connected to the USB increases, the data transfer rate [[for]] of each USB device is decreased due to the shared bandwidth, thus it cannot meet the desired expectation.

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Please amend paragraph [0005] as follows:

[0005] In the light of the preface, it is an object of the present invention to provide a data transfer method for a USB device. The method detects a data transfer rate of a bulk transfer [[type]] transmission in the USB first, and when the data transfer rate of the bulk transfer [[type]] transmission in the USB is lower than a predetermined value, the method selects an interrupt transfer [[type]] transmission in the USB to transfer the data in the USB device, so as to ensure that the transfer bandwidth thereof is better utilized.

Please amend paragraph [0006] as follows:

[0006] In order to achieve the object mentioned above and other advantages, the present invention provides a data transfer method for a USB device. The method comprises: connecting a USB device to a USB; detecting and determining whether the data transfer rate of the bulk transfer [[type]] transmission in the USB is lower than a predetermined value; and if the data transfer rate of the bulk transfer [[type]] transmission in the USB is lower than the predetermined value, swapping to use the interrupt transfer [[type]] transmission in the USB to transfer the data in the USB device, so as to ensure the transfer bandwidth thereof is better utilized.

Please amend paragraph [0007] as follows:

[0007] In an embodiment of the present invention, the data transfer method for the USB device further comprises: when the data transfer rate of the bulk transfer [[type]] transmission in

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the USB is not lower than the predetermined value, the bulk transfer [[type]] transmission in the USB to transfer the data in the USB device is [[used]] swapped to use.

Please amend paragraph [0008] as follows:

[0008] In an embodiment of the present invention, the data transfer method for the USB device further comprises: when using the interrupt transfer [[type]] transmission in the USB to transfer the data in the USB device for a predetermined period of time, swapping back to use the bulk transfer [[type]] transmission to transfer the data in the USB device for trying to use a higher transfer rate to transfer the data in the USB device.

Please amend paragraph [0009] as follows:

[0009] In an embodiment of the present invention, the predetermined value set in the data transfer method for the USB device is preferably a data transfer rate which is guaranteed by the interrupt transfer [[type]] transmission in the USB.

Please amend paragraph [0010] as follows:

[0010] In summary, by applying a data transfer method for the USB device provided by the present invention, a data transfer rate of the bulk transfer [[type]] transmission in the USB is detected first, and when the data transfer rate of the bulk transfer [[type]] transmission in the USB is lower than a predetermined value, an interrupt transfer [[type]] transmission in the USB

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is selected to transfer the data in the USB device, so as to ensure the transfer bandwidth thereof is

better utilized.

Please amend paragraph [0012] as follows:

[0012] FIG. 1 is a transfer rate sharing diagram of a USB which connects connecting to

different number quantities of USB devices using the bulk transfer [[type]] transmission.

Please amend paragraph [0014] as follows:

[0014] FIG. 3 is a transfer rate sharing diagram of a USB which connects to different

number of the USB devices using the bulk transfer [[type]] transmission and the interrupt transfer

[[type]] transmission.

Please amend paragraph [0015] as follows:

[0015] As mentioned above, the bulk transfer [[type]] transmission is commonly used in

the USB storage device such as the flash disk for transmitting a great amount of data. However,

since the bulk transfer [[type]] transmission using the USB cannot guarantee the data transfer

bandwidth when multiple USB devices use one USB bus simultaneously, the bandwidth of the

USB is distributed and shared by all USB devices inserted into the same USB bus and

accordingly, the transfer rate is degraded. Therefore, in order to resolve the above problem, a

data transfer method for the USB device is provided by the present invention. The method is

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suitable for a USB device which predefines two sets of descriptor, wherein one set defines the USB device as a bulk endpoint, and the other set defines the USB device as an interrupt endpoint, so as to ensure the transfer bandwidth thereof is better utilized while still maintaining the general characteristic of the USB device.

Please amend paragraph [0016] as follows:

[0016] FIG. 2 is a flow chart illustrating a data transfer method for the USB device according to a preferred embodiment of the present invention. As shown in the diagram, in step S210, whether or not a USB device is inserted into a USB host is detected, that is whether the USB device is connected to the USB is detected, if yes, the process enters into step S220 for detecting and determining whether or not the data transfer rate of the bulk transfer [[type]] transmission in the USB is lower than a predetermined value.

Please amend paragraph [0017] as follows:

[0017] When it is determined in step S220 that the data transfer rate of the bulk transfer [[type]] transmission in the USB is lower than the predetermined value, the process enters into step S230 for swapping to use the interrupt transfer [[type]] transmission in the USB to transfer the data in the USB device. Because having the USB hand shake mechanism, the interrupt transfer [[type]] transmission of the USB guarantees the correctness of the data transfer, and it is also a transfer [[type]] that guarantees the transfer bandwidth among various USB transmissions.

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Therefore, no matter how many USB devices are connected to the USB simultaneously, it is guaranteed that a certain data transfer bandwidth is reserved. Therefore, it is ensured that the transfer bandwidth thereof is better utilized even when the data transfer rate of the bulk transfer [[type]] transmission in the USB is degraded.

Please amend paragraph [0018] as follows:

[0018] Referring to FIG. 3, a transfer rate sharing diagram of a USB connecting to different number of the USB devices using the bulk transfer [[type]] transmission and the interrupt transfer [[type]] transmission is shown. It is assumed that the maximum data transfer rate for the USB is 48 Mbytes/sec, the data transfer bandwidth reserved for the interrupt transfer [[type]] transmission in the USB is 24 Mbytes/sec, and there are four devices A, B, C, and D, wherein each of the devices B, C, and D has a bulk endpoint. As shown in FIG. 3(a), when devices A, B, and C are use one USB simultaneously, the shared data transfer rate for device A used in the data transfer method for the USB device according to the present invention is 24 Mbytes/sec, and the shared data transfer rate for each device B and C is 12 Mbytes/sec, respectively. As shown in FIG. 3(b), when devices A, B, C, and D are using the USB simultaneously, the shared data transfer rate for device A used in the data transfer method for the USB device according to the present invention is still 24 Mbytes/sec, whereas the shared data transfer rate for each device B, C, and D is 8 Mbytes/sec, respectively. In other words, it is

ensured that the data transfer rate of device A used in the data transfer method for the USB

device according to the present invention is 24 Mbytes/sec.

Please amend paragraph [0019] as follows:

[0019]   Referring to FIG. 2, after swapping to use the interrupt transfer [[type]]

transmission in the USB to transfer the data in the USB device in step S230, the process enters

into step S240 for determining whether or not the predetermined time is due.   If the

predetermined time is due, the process enters into step S250 for swapping to use the bulk transfer

[[type]] transmission in the USB to transfer the data in the USB device attempting to use a higher

data transfer rate to transfer data.   The reason for having this step is because the number of the

USB devices connected to the USB is dynamically changed.   Therefore, when the number of the

USB devices connected to the USB is decreased or the required data transfer bandwidth is

reduced, the data transfer rate of the bulk transfer [[type]] transmission in the USB is higher than

the predetermined value again.   Meanwhile, the bulk transfer [[type]] transmission in the USB is

used to transfer data, such that the USB bandwidth is fully utilized.

Please amend paragraph [0020] as follows:

[0020] In addition, if it is determined in step S220 that the data transfer rate of the bulk

transfer [[type]] transmission in the USB is not lower than the predetermined value, the process

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enters into step S250 where the bulk transfer [[type]] transmission in the USB is used to transfer

the data in the USB device.

Please amend paragraph [0021] as follows:

[0021] ~~Wherein, the~~ The predetermined value set in the data transfer method for the USB

device is preferably a data transfer rate which is guaranteed by the interrupt transfer [[type]]

transmission in the USB, for example, 24 Mbytes/sec as mentioned above. Therefore, when

using the data transfer method for the USB device provided by the present invention to transfer

the data in the USB device, it is possible to select a transmission method with a higher data

transfer rate between the data transfer rate of the bulk transfer [[type]] transmission in the USB

and the data transfer rate of the interrupt transfer [[type]] transmission in the USB, so as to

ensure the transfer bandwidth thereof is better utilized.

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